

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 **Claim 1 (currently amended):** A waveform equalizer
2 comprising:
3 an equalizing filter unit including a delay circuit
4 with a tap;
5 a discriminator which decodes an output signal of said
6 equalizing filter unit;
7 tap arrangement control means comprising an impulse
8 response predicting device for predicting an impulse
9 response of a transfer path, which controls a tap
10 arrangement of said equalizing filter unit; and
11 tap coefficient monitoring unit which monitors a tap
12 coefficient of said equalizing filter unit, and changes the
13 tap arrangement of said equalizing filter unit so as to
14 restart a starting step of the equalizing filter unit for
15 equalizing a reception signal, depending upon a change
16 state of the tap coefficient used while the reception
17 signal is equalized;
18 wherein said tap arrangement control means changes the
19 tap arrangement of said equalizing filter unit in such a
20 manner that said tap arrangement becomes at least one of:
21 optimum with respect to an impulse response
22 predicted by both the equalized output of said

23 discriminator and a condition of the reception signal,
24 and
25 suitable for the next impulse having a large
26 pulse component in response to an impulse response
27 predicted by a reference signal.

1 **Claim 2 (currently amended):** A waveform equalizer
2 equipped comprising:
3 an equalizing filter unit including a delay circuit
4 with a tap;
5 a discriminator which decodes an output signal of said
6 equalizing filter unit;
7 tap arrangement control means comprising an impulse
8 response predicting device for predicting an impulse
9 response of a transfer path, which controls a tap
10 arrangement of said equalizing filter unit; and
11 a tap coefficient monitoring unit which monitors a tap
12 coefficient of said equalizing filter unit, and changes the
13 tap arrangement of said equalizing filter unit so as to
14 restart reception signal equalizing steps from a
15 preselected step prior to the present step thereof while
16 said reception signal is equalized, depending upon a change
17 state of the tap coefficient during the equalization of
18 said reception signal;
19 wherein said tap arrangement control means changes the
20 tap arrangement of said equalizing filter unit in such a
21 manner that said tap arrangement becomes at least one of:

22 optimum with respect to an impulse response
23 predicted by both the equalized output of said
24 discriminator and a condition of the reception signal,
25 and
26 suitable for the next impulse having a large
27 pulse component in response to an impulse response
28 predicted by a reference signal.

1 **Claim 3 (currently amended):** A waveform equalizer
2 equipped comprising:
3 an equalizing filter unit including a delay circuit
4 with a tap;
5 a discriminator which decodes an output signal of said
6 equalizing filter unit;
7 tap arrangement control means comprising an impulse
8 response predicting device for predicting an impulse
9 response of a transfer path, which controls a tap
10 arrangement of said equalizing filter unit;
11 a tap coefficient monitoring unit which performs an
12 operation of monitoring a tap coefficient of said
13 equalizing filter unit and changing the tap arrangement of
14 said equalizing filter unit so as to restart reception
15 signal equalizing steps from a preselected step prior to
16 the present step thereof while said reception signal is
17 equalized, depending upon a change state of the tap
18 coefficient during the equalization of said reception
19 signal, and further so as to repeatedly perform said

20 operation, depending upon a change condition of the tap
21 coefficient while restarting the equalization of said
22 reception signal;

23 wherein said tap arrangement control means changes the
24 tap arrangement of said equalizing filter unit in such a
25 manner that said tap arrangement becomes at least one of:

26 optimum with respect to an impulse response
27 predicted by both the equalized output of said
28 discriminator and a condition of the reception signal,
29 and

30 suitable for the next impulse having a large
31 pulse component in response to an impulse response
32 predicted by a reference signal.

1 **Claim 4 (original):** A waveform equalizer as claimed
2 in any one of the preceding claims 1, 2, and 3, wherein
3 said tap coefficient monitoring unit monitors only a
4 specific tap, and when a sharp change in a tap coefficient
5 of said specific tap is detected, said tap coefficient
6 monitoring unit instructs that the tap arrangement of said
7 equalizing filter unit is changed so as to restart the
8 equalization of the reception signal.

1 **Claim 5 (original):** A waveform equalizer as claimed
2 in any one of the preceding claims 1, 2, and 3, wherein
3 said tap coefficient monitoring unit monitors only a
4 specific tap, and when dispersion of a change amount of

5 said tap coefficient exceeds a certain threshold value,
6 said tap coefficient monitoring unit instructs that the tap
7 arrangement of said equalizing filter unit is changed so as
8 to restart the equalization of the reception signal.

Claims 6-7 (canceled)

1 **Claim 8 (currently amended):** A mobile station
2 wireless apparatus equipped with a waveform equalizer
3 capable of removing an adverse influence caused by
4 frequency selective fading, said waveform equalizer
5 comprising:

6 an equalizing filter unit including a delay circuit
7 with a tap;

8 a discriminator which decodes an output signal of said
9 equalizing filter unit;

10 tap arrangement control means which controls a tap
11 arrangement of said equalizing filter unit; and

12 a tap coefficient monitoring unit which monitors a tap
13 coefficient of said equalizing filter unit, and changes the
14 tap arrangement of said equalizing filter unit so as to
15 restart a starting step of the equalizing filter unit for
16 equalizing a reception signal from a beginning signal
17 portion of the reception signal, depending upon a change
18 state of the tap coefficient used while the reception
19 signal is equalized.

1 **Claim 9 (currently amended):** A mobile station
2 wireless apparatus equipped with a waveform equalizer
3 capable of removing an adverse influence caused by
4 frequency selective fading, said waveform equalizer
5 comprising:

6 an equalizing filter unit including a delay circuit
7 with a tap;

8 a discriminator which decodes an output signal of said
9 equalizing filter unit;

10 tap arrangement control means comprising an impulse
11 response predicting device for predicting an impulse
12 response of a transfer path, which controls a tap
13 arrangement of said equalizing filter unit; and

14 a tap coefficient monitoring unit which monitors a tap
15 coefficient of said equalizing filter unit, and changes the
16 tap arrangement of said equalizing filter unit so as to
17 restart reception signal equalizing steps from a
18 preselected step prior to the present step thereof while
19 said reception signal is equalized, depending upon a change
20 state of the tap coefficient during the equalization of
21 said reception signal;

22 wherein said tap arrangement control means changes the
23 tap arrangement of said equalizing filter unit in such a
24 manner that said tap arrangement becomes at least one of:

25 optimum with respect to an impulse response
26 predicted by both the equalized output of said

27 discriminator and a condition of the reception signal,
28 and
29 suitable for the next impulse having a large
30 pulse component in response to an impulse response
31 predicted by a reference signal.

1 **Claim 10 (currently amended):** A mobile station
2 wireless apparatus equipped with a waveform equalizer
3 capable of removing an adverse influence caused by
4 frequency selective fading, said waveform equalizer
5 comprising:

6 an equalizing filter unit including a delay circuit
7 with a tap;

8 a discriminator which decodes an output signal of said
9 equalizing filter unit;

10 tap arrangement control means comprising an impulse
11 response predicting device for predicting an impulse
12 response of a transfer path, which controls a tap
13 arrangement of said equalizing filter unit; and

14 a tap coefficient monitoring unit which performs and
15 operation of monitoring a tap coefficient of said
16 equalizing filter unit and changing the tap arrangement of
17 said equalizing filter unit so as to restart reception
18 signal equalizing steps from a preselected step prior to
19 the present step thereof while said reception signal is
20 equalized, depending upon a change state of the tap
21 coefficient during the equalization of said reception

22 signal; and further so as to repeatedly perform said
23 operation, depending upon a change condition of the tap
24 coefficient while restarting the equalization of said
25 reception signal;

26 wherein said tap arrangement control means changes the
27 tap arrangement of said equalizing filter unit in such a
28 manner that said tap arrangement becomes at least one of:

29 optimum with respect to an impulse response
30 predicted by both the equalized output of said
31 discriminator and a condition of the reception signal,
32 and

33 suitable for the next impulse having a large
34 pulse component in response to an impulse response
35 predicted by a reference signal.

1 **Claim 11 (currently amended):** A mobile station
2 wireless apparatus equipped with a waveform equalizer
3 capable of removing an adverse influence caused by
4 frequency selective fading, said waveform equalizer
5 comprising:

6 an equalizing filter unit including a delay circuit
7 with a tap;

8 a discriminator which decodes an output signal of said
9 equalizing filter unit;

10 tap arrangement control means which controls a tap
11 arrangement of said equalizing filter unit;

12 a tap coefficient monitoring unit which monitors a tap
13 coefficient of said equalizing filter unit; and
14 detector means which detects a moving speed of the
15 mobile station wireless apparatus,
16 wherein when the moving speed is higher than a
17 preselected threshold value, the tap arrangement of said
18 equalizing filter unit is changed so as to restart a
19 starting step of the equalizing filter unit for equalizing
20 a reception signal, depending upon a change state of the
21 tap coefficient used while the reception signal is
22 equalized.

1 **Claim 12 (currently amended):** A mobile station
2 wireless apparatus equipped with a waveform equalizer
3 capable of removing an adverse influence caused by
4 frequency selective fading, said waveform equalizer
5 comprising:
6 an equalizing filter unit including a delay circuit
7 with a tap;
8 a discriminator which decodes an output. signal of
9 said equalizing filter unit;
10 tap arrangement control means which controls a tap
11 arrangement of said equalizing filter unit;
12 a tap coefficient monitoring unit which monitors a tap
13 coefficient of said equalizing filter unit; and
14 detector means which detects a moving speed of the
15 mobile station wireless apparatus,

16 wherein when the moving speed is higher than a
17 preselected threshold value, the tap arrangement of said
18 equalizing filter unit is changed so as to restart
19 reception signal equalizing steps from a preselected step
20 prior to the present step thereof while said reception
21 signal is equalized, depending upon a change state of the
22 tap coefficient during the equalization of said reception
23 signal.

1 **Claim 13 (currently amended):** A mobile station
2 wireless apparatus equipped with a waveform equalizer
3 capable of removing an adverse influence caused by
4 frequency selective fading, said waveform equalizer
5 comprising:

6 an equalizing filter unit including a delay circuit
7 with a tap;

8 a discriminator which decodes an output signal of said
9 equalizing filter unit;

10 tap arrangement control means which controls a tap
11 arrangement of said equalizing filter unit;

12 a tap coefficient monitoring unit which monitors a tap
13 coefficient of said equalizing filter unit; and

14 detector means which detects a moving speed of the
15 mobile station wireless apparatus,

16 wherein when the moving speed is higher than a
17 preselected threshold value, an operation is performed in
18 which the tap arrangement of said equalizing filter unit is

19 changed so as to restart reception signal equalizing steps
20 from a preselected step prior to the present step thereof
21 while said reception signal is equalized, depending upon a
22 change state of the tap coefficient during the equalization
23 of said reception signal; and further so as to repeatedly
24 perform said operation, depending upon a change condition
25 of the tap coefficient while restarting the equalization of
26 said reception signal.

1 **Claim 14 (currently amended):** A base station wireless
2 apparatus equipped with a waveform equalizer capable of
3 removing an adverse influence caused by frequency selective
4 fading, said waveform equalizer comprising:
5 an equalizing filter unit including a delay circuit
6 with a tap;
7 a discriminator which decodes an output signal of said
8 equalizing filter unit;
9 tap arrangement control means which controls a tap
10 arrangement of said equalizing filter unit; and
11 a tap coefficient monitoring unit which monitors a tap
12 coefficient of said equalizing filter unit, and changes the
13 tap arrangement of said equalizing filter unit so as to
14 restart a starting step of the equalizing filter unit for
15 equalizing a reception signal from a beginning signal
16 portion of the reception signal, depending upon a change
17 state of the tap coefficient used while the reception
18 signal is equalized.

1 **Claim 15 (currently amended):** A base station wireless
2 apparatus equipped with a waveform equalizer capable of
3 removing an adverse influence caused by frequency selective
4 fading, said waveform equalizer comprising:

5 an equalizing filter unit including a delay circuit
6 with a tap;

7 a discriminator which decodes an output signal of said
8 equalizing filter unit;

9 tap arrangement control means comprising an impulse
10 response predicting device for predicting an impulse
11 response of a transfer path, which controls a tap
12 arrangement of said equalizing filter unit; and

13 a tap coefficient monitoring unit which monitors a tap
14 coefficient of said equalizing filter unit, and changes the
15 tap arrangement of said equalizing filter unit so as to
16 restart reception signal equalizing steps from a
17 preselected step prior to the present step thereof while
18 said reception signal is equalized, depending upon a change
19 state of the tap coefficient during the equalization of
20 said reception signal;

21 wherein said tap arrangement control means changes the
22 tap arrangement of said equalizing filter unit in such a
23 manner that said tap arrangement becomes at least one of:

24 optimum with respect to an impulse response
25 predicted by both the equalized output of said

26 discriminator and a condition of the reception signal,
27 and
28 suitable for the next impulse having a large
29 pulse component in response to an impulse response
30 predicted by a reference signal.

1 **Claim 16 (currently amended):** A base station wireless
2 apparatus equipped with a waveform equalizer capable of
3 removing an adverse influence caused by frequency selective
4 fading, said waveform equalizer comprising:
5 an equalizing filter unit including a delay circuit
6 with a tap;
7 a discriminator which decodes an output signal of said
8 equalizing filter unit;
9 tap arrangement control means comprising an impulse
10 response predicting device for predicting an impulse
11 response of a transfer path, which controls a tap
12 arrangement of said equalizing filter unit; and
13 a tap coefficient monitoring unit which performs an
14 operation of monitoring a tap coefficient of said
15 equalizing filter unit and changing the tap arrangement of
16 said equalizing filter unit so as to restart reception
17 signal equalizing steps from a preselected step prior to
18 the present step thereof while said reception signal is
19 equalized, depending upon a change state of the tap
20 coefficient during the equalization of said reception
21 signal; and further so as to repeatedly perform said

22 operation, depending upon a change condition of the tap
23 coefficient while restarting the equalization of said
24 reception signal;

25 wherein said tap arrangement control means changes the
26 tap arrangement of said equalizing filter unit in such a
27 manner that said tap arrangement becomes at least one of:

28 optimum with respect to an impulse response
29 predicted by both the equalized output of said
30 discriminator and a condition of the reception signal,
31 and

32 suitable for the next impulse having a large
33 pulse component in response to an impulse response
34 predicted by a reference signal.

1 **Claim 17 (currently amended):** A mobile communication
2 system having a base station and a mobile station, in which
3 at least one of said base station and said mobile station
4 is equipped with a waveform equalizer capable of removing
5 an adverse influence caused by frequency selective fading,
6 said waveform equalizer comprising:

7 an equalizing filter unit including a delay circuit
8 with a tap;

9 a discriminator which decodes an output signal of said
10 equalizing filter unit;

11 tap arrangement control means which controls a tap
12 arrangement of said equalizing filter unit; and

13 a tap coefficient monitoring unit which monitors a tap
14 coefficient of said equalizing filter unit, and changes the
15 tap arrangement of said equalizing filter unit so as to
16 restart a starting step of the equalizing filter unit for
17 equalizing a reception signal from a beginning signal
18 portion of the reception signal, depending upon a change
19 state of the tap coefficient used while the reception
20 signal is equalized.

1 **Claim 18 (currently amended):** A mobile communication
2 system having a base station and a mobile station, in which
3 at least one of said base station and said mobile station
4 is equipped with a waveform equalizer capable of removing
5 an adverse influence caused by frequency selective fading,
6 said waveform equalizer comprising:

7 an equalizing filter unit including a delay circuit
8 having a tap;

9 a discriminator which decodes an output signal of said
10 equalizing filter unit;

11 tap arrangement control means comprising an impulse
12 response predicting device for predicting an impulse
13 response of a transfer path, which controls a tap
14 arrangement of said equalizing filter unit; and

15 a tap coefficient monitoring unit which monitors a tap
16 coefficient of said equalizing filter unit, and changes the
17 tap arrangement of said equalizing filter unit so as to
18 restart reception signal equalizing steps from a

19 preselected step prior to the present step thereof while
20 said reception signal is equalized, depending upon a change
21 state of the tap coefficient during the equalization of
22 said reception signal;

23 wherein said tap arrangement control means changes the
24 tap arrangement of said equalizing filter unit in such a
25 manner that said tap arrangement becomes at least one of:

26 optimum with respect to an impulse response
27 predicted by both the equalized output of said
28 discriminator and a condition of the reception signal,
29 and

30 suitable for the next impulse having a large
31 pulse component in response to an impulse response
32 predicted by a reference signal.

1 **Claim 19 (currently amended):** A mobile communication
2 system having a base station and a mobile station, in which
3 at least one of said base station and said mobile station
4 is equipped with a waveform equalizer capable of removing
5 an adverse influence caused by frequency selective fading,
6 said waveform equalizer comprising:

7 an equalizing filter unit including a delay circuit
8 with a tap;

9 a discriminator which decodes an output signal of said
10 equalizing filter unit;

11 tap arrangement control means comprising an impulse
12 response predicting device for predicting an impulse

13 response of a transfer path, which controls a tap
14 arrangement of said equalizing filter unit; and
15 a tap coefficient monitoring unit for performing an
16 operation of monitoring a tap coefficient of said
17 equalizing filter unit and changing the tap arrangement of
18 said equalizing filter unit so as to restart reception
19 signal equalizing steps from a preselected step prior to
20 the present step thereof while said reception signal is
21 equalized, depending upon a change state of the tap
22 coefficient during the equalization of said reception
23 signal; and further so as to repeatedly perform said
24 operation, depending upon a change condition of the tap
25 coefficient while restarting the equalization of said
26 reception signal;
27 wherein said tap arrangement control means changes the
28 tap arrangement of said equalizing filter unit in such a
29 manner that said tap arrangement becomes at least one of:
30 optimum with respect to an impulse response
31 predicted by both the equalized output of said
32 discriminator and a condition of the reception signal,
33 and
34 suitable for the next impulse having a large
35 pulse component in response to an impulse response
36 predicted by a reference signal.

1 **Claim 20 (previously presented):** A mobile
2 communication system having a base station and a mobile

3 station, in which said mobile station is equipped with a
4 waveform equalizer capable of removing an adverse influence
5 caused by frequency selective fading, said waveform
6 equalizer comprising:

7 an equalizing filter unit including a delay circuit
8 with a tap;

9 a discriminator which decodes an output signal of said
10 equalizing filter unit;

11 tap arrangement control means which controls a tap
12 arrangement of said equalizing filter unit;

13 a tap coefficient monitoring unit which monitors a tap
14 coefficient of said equalizing filter unit; and

15 detector means which detects a moving speed of the
16 mobile station wireless apparatus,

17 wherein when the moving speed is higher than a
18 preselected threshold value, the tap arrangement of said
19 equalizing filter unit is changed so as to restart a
20 starting step of the equalizing filter unit for equalizing
21 a reception signal, depending upon a change state of the
22 tap coefficient used while the reception signal is
23 equalized.

1 **Claim 21 (original):** A mobile communication system
2 having a base station and a mobile station, in which said
3 mobile station is equipped with a waveform equalizer
4 capable of removing an adverse influence caused by

5 frequency selective fading, said waveform equalizer
6 comprising:

7 an equalizing filter unit including a delay circuit
8 with a tap;

9 a discriminator which decodes an output signal of said
10 equalizing filter unit;

11 tap arrangement control means which controls a tap
12 arrangement of said equalizing filter unit;

13 a tap coefficient monitoring unit which monitors a tap
14 coefficient of said equalizing filter unit; and

15 detector means which detects a moving speed of the
16 mobile station wireless apparatus,

17 wherein when the moving speed is higher than a
18 preselected threshold value, the tap arrangement of said
19 equalizing filter unit is changed so as to restart
20 reception signal equalizing steps from a preselected step
21 prior to the present step thereof while said reception
22 signal is equalized, depending upon a change state of the
23 tap coefficient during the equalization of said reception
24 signal.

1 **Claim 22 (previously presented):** A mobile
2 communication system having a base station and a mobile
3 station, in which said mobile station is equipped with a
4 waveform equalizer capable of removing an adverse influence
5 caused by frequency selective fading, said waveform
6 equalizer comprising:

7 an equalizing filter unit including a delay circuit
8 with a tap;
9 a discriminator which decodes an output signal of said
10 equalizing filter unit;
11 tap arrangement control means which controls a tap
12 arrangement of said equalizing filter unit;
13 a tap coefficient monitoring unit which monitors a tap
14 coefficient of said equalizing filter unit; and
15 detector means which detects a moving speed of the
16 mobile station wireless apparatus,
17 wherein when the moving speed is higher than a
18 preselected threshold value, an operation is performed in
19 which the tap arrangement of said equalizing filter unit is
20 changed so as to restart reception signal equalizing steps
21 from a preselected step prior to the present step thereof
22 while said reception signal is equalized, depending upon a
23 change state of the tap coefficient during the equalization
24 of said reception signal; and further so as to repeatedly
25 perform said operation, depending upon a change condition
26 of the tap coefficient while restarting the equalization of
27 said reception signal.